NTN-SNR HYDRAULIC NUT HMV..EBF

OPERATING INSTRUCTIONS

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1. SAFETY INSTRUCTIONS

Inappropriate handling of hydraulic nuts of the type HMV..EBF can lead to serious injuries and compromise safety.

Caution!

The safety instructions provided must be adhered to!

- The operating staff must be authorised!
- The safety instructions and these operating instructions must be complied with in full. They have to be stored with the tools!
- The hydraulic nuts, pump with hydraulic pipe as well as all accessories must be carefully checked for damage before the initial operation - defective or worn parts pose a serious risk and may not be used under any circumstances!
- It must be ensured that there is no air in the hydraulic system - it must be completely bled before initial operation!
- The ring piston may never be moved out of the ring body further than up to the marking!
- A manometer must always be connected to check the work pressure. The maximum permitted pressure for the hydraulic nut as well as other accessories may never be exceeded!
- All components used must be suited to the maximum pressure of the pump!
- The hydraulic nut may only be operated with a manual pump!
- Dirt and oil residues must always be instantly removed!
- Protective goggles must always be worn!
- Changes to the components are not permitted!
- Only use NTN-SNR original spare parts!
- Always use clean pressure oil!

Referring to chapter 2 of this operating instruction a different or additional use of the hydraulic nut is not intended. The manufacturer is not responsible for damage resulting from inappropriate use. The user retains the overall responsibility and is alone in bearing the risk.

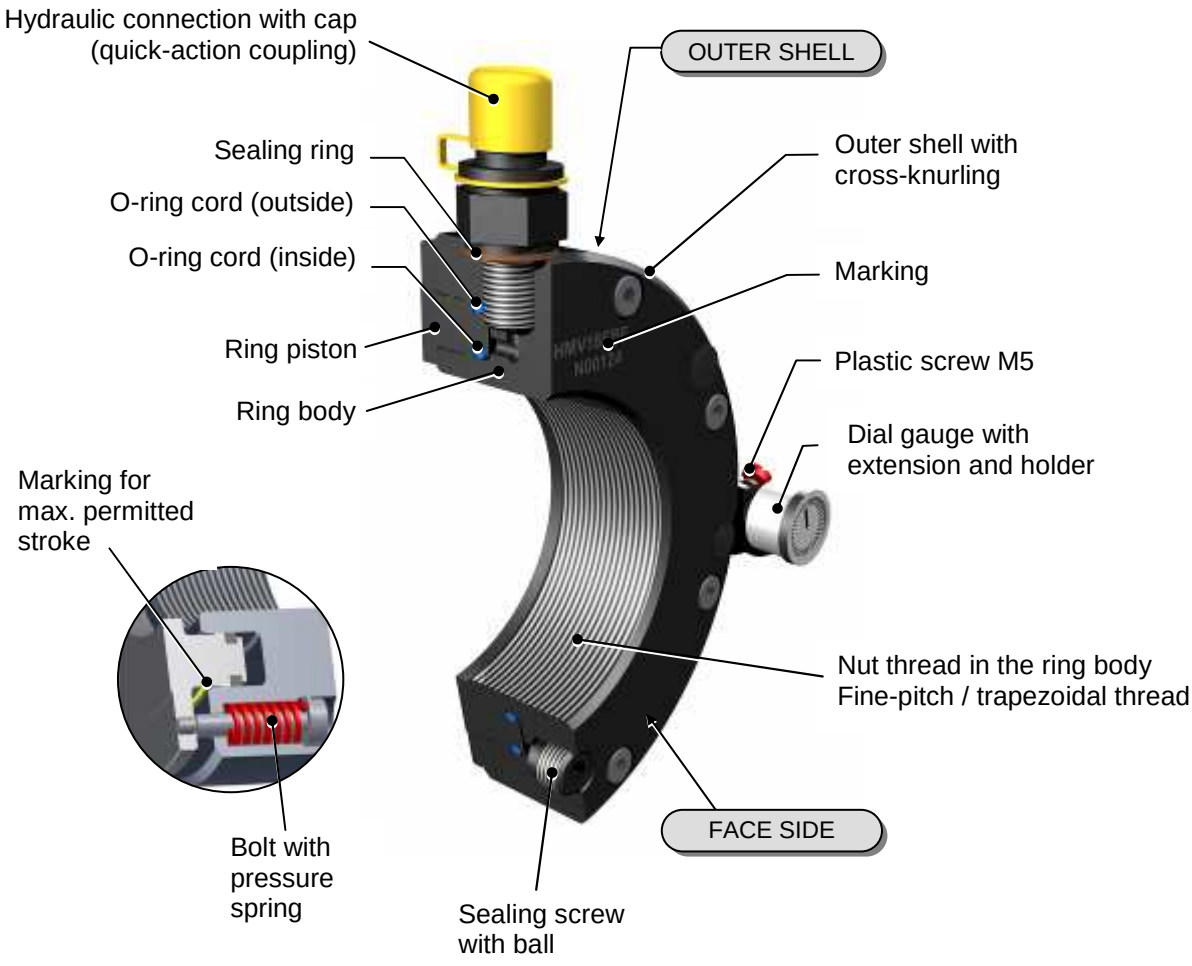
2. PRODUCT DESCRIPTION

The HMV..EFB hydraulic nut was designed as a tool for simple installation and de-installation of machine parts with cone-shaped holes. The parts to be installed can be moved into the desired position safely and without excessive use of force.

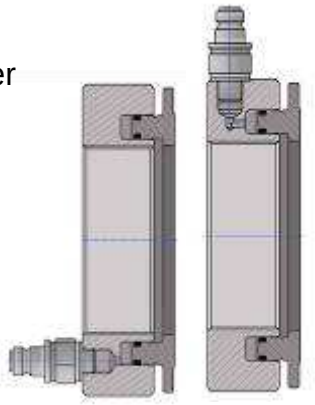
Main area of use
Installation of roller bearings (cone 1:12 / 1:30) on cone-shaped shafts, sleeves or withdrawal sleeves.

2.1. STRUCTURE AND EQUIPMENT

The hydraulic nut mainly consists of the ring body and ring piston. The ring body has an internal thread that is used to screw it onto a shaft or sleeve thread. The circumferential groove at the end face guides the ring piston. Hydraulic oil is evenly distributed in the open space between the piston and the ring body and presses onto the piston.
Two O-ring cords are inserted into the ring piston to seal the pressure space.



One G1/4 threaded hole is provided in the end face as well as in the outer shell to connect a hydraulic pipe. The threaded hole in the end face is closed at the factory with a sealing screw with ball (*Item 1*).
A fast-action coupling (*Item 2*) is screwed into the threaded hole in the outer shell.



Optional connection at:
Face side or Outer shell

Cross-knurling is provided on the outer shell on the hydraulic nut to make it easier to screw it onto a shaft or sleeve thread.
The attached, standard mounting lever (*Item 6*) can also be used for easy turning of the nut. It is an installation aid and is pushed into the blind holes in the outer shell.

Bolts with pressure springs *Item 10*) are circumferentially mounted within the hydraulic nut. They ensure that the piston is reset and help to return the oil into the reservoir of the pump.
The piston does not need to be pushed back manually.

Tommy bar

2.2. CONNECTIONS / BORES

Connection for hydraulic pipe G1/4 (outer shell)
Fast-action coupling installed in factory

Threaded holes for de-installing the ring piston
HMV10EBF – HMV48EBF 3 x M5
HMV50EBF – HMV98EBF 4 x M6
HMV100EBF – HMV200EBF 6 x M6

Blind holes for mounting lever 2x Ø 11 mm

Thread for locking the dial gauge holder M5

Ring srew

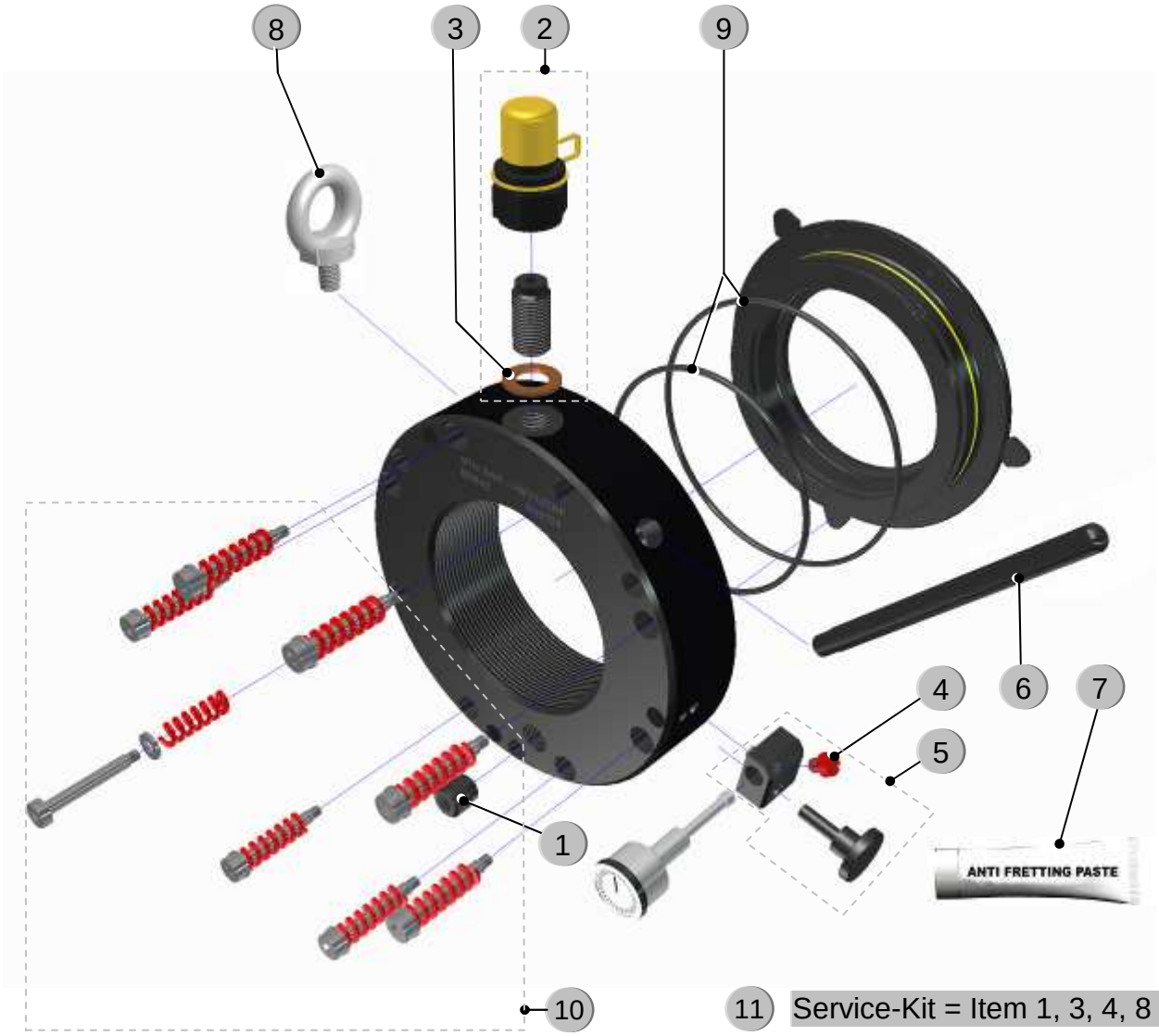
Connection for hydraulic pipe G1/4 (end face)
closed by factory

Hydraulic nuts from size HMV60EBF onwards are equipped with additional threaded holes in the outer shell. The ring screws included in the delivery can be installed there for better handling.

2.3. FUNCTIONAL PRINCIPLE

Oil pressure inside the ring body is created by a hydraulic pump and ensures axial advance of the ring piston. This displacement presses the roller bearing or the appropriate component onto a cone-shaped seat. The travel should be measured with a dial gauge for accurate positioning of the component.
The ring piston is automatically pushed back to the starting position when the pump pressure is released. The oil automatically flows back into the storage container of the pump.

3. SPARE PARTS, ACCESSORIES AND TECHNICAL DATA



3.1. HYDRAULIC NUT

Pos	Article	Order Number	Notice
1	Sealing screw with ball *	TOOL HMV-BALL PLUG 1/4	
2	Hydraulic connection *	TOOL HMV NIPPLE 1/4	Consisting of: 1x quick-action coupling with cover 1x adapter thread 1x sealing ring
3	Sealing ring for hydraulic connection *	TOOL HMV-SW 1/4	
4	Plastic screw for dial gauge locking *	TOOL HMV-PAS M5	2 pieces / packing unit
5	Dial gauge holder	TOOL HMV DG Holder	Consisting of: 1x M5 plastic screw 1x M5 Knurled head screw 1x Holder with centre pin
6	Tommy bar *	TOOL HMV-TBAR 11x150	
7	Mounting paste	LUB ANTI FRETTING PASTE	From HMV54EBF included in delivery
8	Ring screw DIN 580	TOOL HMV-EBO M12 TOOL HMV-EBO M16	From HMV60EBF included in delivery
9	Set of piston seals *	TOOL HMV.. / PISTON SEALS	Example: TOOL HMV50 / PISTON SEALS Consisting of: 1x O-ring cord (inside) 1x O-ring cord (outside)
10	Set of pressure springs	TOOL HMV.. SET-PSK	Example: HMV50SET-PSK
11	Service-kit	TOOL HMV.. SET-MTC	Example: HMV50SET-MTC Consisting of: 1x TOOL HMV.. / PISTON SEALS 1x TOOL HMV-SW 1/4 1x TOOL HMV-BALL PLUG 1/4 1x TOOL HMV-PAS M5

* *Parts included in delivery*

3.2. ACCESSORIES

Article	Order Number
Hydraulic pump with 0.3 l oil volume Incl. hydraulic hose, connection nipple, pressure manometer (analogue), 0.3 l oil-filled max. working pressure 700 bar	TOOLPUMP SET 700B-0,3
Hydraulic pump with 0.9 l oil volume Incl. hydraulic hose, connection nipple, pressure manometer (analogue), 0.9 l oil-filled max. working pressure 700 bar	TOOLPUMP SET 700B-0,9
Hydraulic pump with 2.55 l oil volume Incl. hydraulic hose, connection nipple, pressure manometer (analogue), 2.55 l oil-filled max. working pressure 1,500 bar	TOOLPUMP SET 1500B-2,5
Manometer up to max. 700 bar (analogue)	TOOL MANOMETER 700
Hydraulic fluid 1.0 l	TOOL HYDRAULIC OIL 1L
Feeler gauge (length 150 mm) Feeler gauge (length 300 mm)	TOOL FEELER GAUGES 150 TOOL FEELER GAUGES 300
Dial gauge for a displacement distance up to 5 mm	TOOL DIAL GAUGE 050
Dial gauge for a displacement distance up to 10 mm	TOOL DIAL GAUGE 100
Extension adapter set for dial gauge	TOOL DIAL EXTENSION SET

3.3. TECHNICAL DATA HMV..EBF

Maximum permissible working pressure	1,000 bar	
Nut thread	HMV 10 EBF to HMV 40 EBF HMV 41 EBF to HMV 200 EBF	ISO965/III-1980, Tolerance class 6H ISO2901-1977, Tolerance class 7H
Required pump- volume for hydraulic nuts	HMV 10 EBF to HMV 54 EBF HMV 56 EBF to HMV 92 EBF > HMV 92 EBF	0.3 l 0.9 l 2.7 l
Thread size of ring screw	HMV 60 EBF to HMV 160 EBF > HMV 160 EBF	M12 M16
Fastening torque pressure spring bolt	≤ HMV40EBF > HMV40EBF	2 Nm 3.9 Nm
Fastening torque Sealing screw with ball		45 Nm

4. PROCEDURE FOR THE ASSEMBLY OF ROLLER BEARINGS

Push the bearing by hand as far as possible onto the cone-shaped seat and screw the hydraulic nut onto the thread of the shaft pin or the sleeve. Ensure that the inner and outer threads are aligned with each other when positioning the nut. It is recommended to use an assembly paste (included in the delivery scope from HMV54EBF onwards). The start of the thread is marked on the outer shell of the ring body to ease the positioning of larger hydraulic nuts (from HMV90EBF onwards).

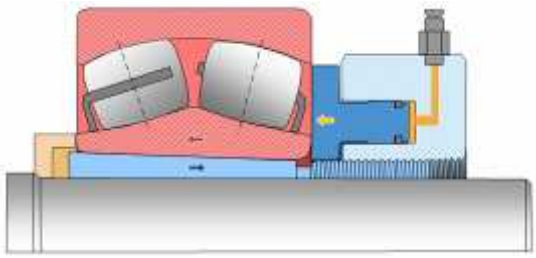
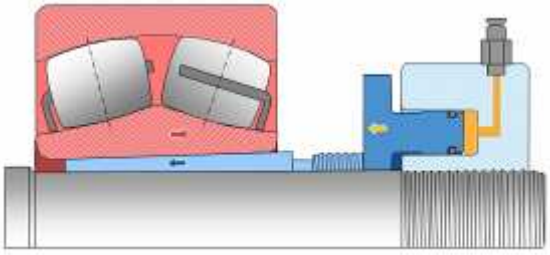
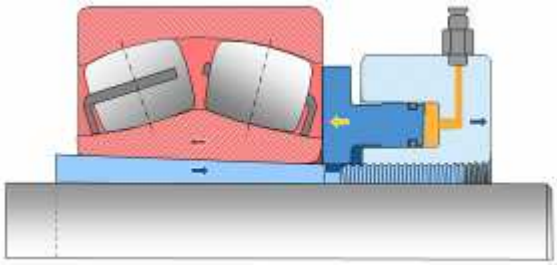
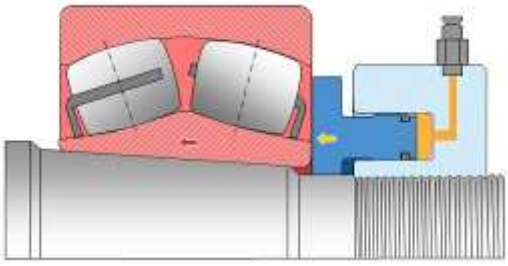
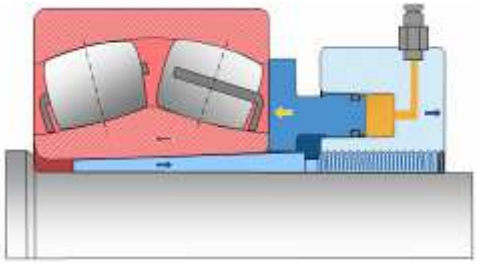
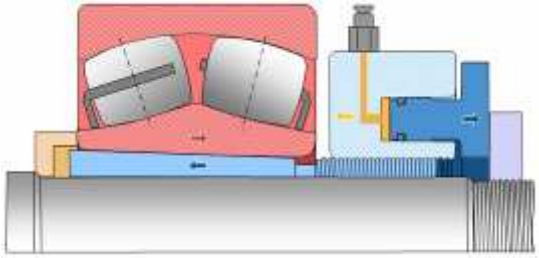
Caution: *Damage due to jamming must be avoided.*

Note:
The hydraulic system must be bled when the nut is used for the first time and after each de-installation of a hydraulic connection.

Screw the whole thread length of the hydraulic nut onto the shaft or sleeve thread and connect the hydraulic pipe to the appropriate hydraulic connection (*Item 2*).
Turn the sealing screw with ball (*Item 1*) to the highest position and loosen it slightly. Then pump oil, using the hydraulic pump, until the oil exits without bubbles. Thereafter, firmly close the sealing screw (max. fastening torque 45 Nm)

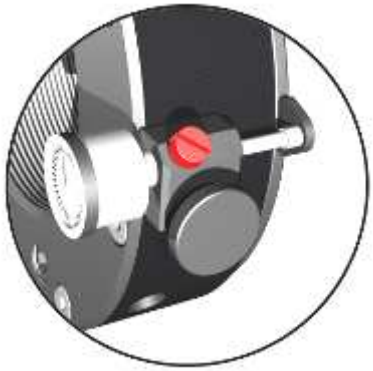
Screw the nut against the bearing until the piston rests fully and evenly against the bearing. The piston must be in its initial position and be completely inserted in the ring body. An overlap of the threads of at least 85% must be ensured so that the pressure forces during the pushing process can be absorbed.
Thereafter, connect the hydraulic pipe to the appropriate hydraulic connection.

5. POSSIBLE MOUNTING / DISMOUNTING SITUATIONS FOR BEARINGS WITH SPHERICAL BORE

MOUNTING	
 Mounting a bearing on an adapter sleeve on cylindrical shaft. Bearing support against stop sleeve.	 Mounting a bearing on a withdrawal sleeve on cylindrical shaft with thread. Bearing support against shaft shoulder.
 Mounting a bearing on an adapter sleeve on cylindrical shaft.	 Mounting a bearing on tapered shaft seat
DISMOUNTING	
 Dismounting of a bearing on a withdrawal sleeve mounted on a cylindrical shaft without thread. Bearing support against shaft shoulder.	 Dismounting of a bearing on an adapter sleeve on cylindrical shaft with thread. Support of hydraulic nut against stop nut.

5.1. POSITIONING / AXIAL DISPLACEMENT

5.1.1. Use of a dial gauge (optional)



For the mounting process of a roller bearing a dial gauge can be used for measuring the axial displacement. Therefore a dial gauge holder *(item 5)* can be installed on the face side of the ring body.
(The holder is included to the scope of delivery)

5.1.2. Mounting the dial gauge with holder

The dial gauge holder *(item 5)* is to be installed only when the HMV is screwed on the thread and the ring piston rests fully against the bearing. This is to prevent injury while turning the nut and to avoid damages on the sensitive dial gauge.
The dial gauge holder is to be mounted radially with the knurled head screw (M5) in one of the three possible positions at the ring body. The dowel pin at the holder helps to secure the position. Insert the dial gauge with the extension into the bore of the holder until the tip of the extension contacts the measurement surface of the ring piston.
Lock the dial gauge with the plastic screw (M5) (*Item 4*) so that it cannot slide.
Turn the adjustment ring of the dial gauge to the zero position and select the axial displacement.

Note:

The axial displacement depends on the series and the size of the roller bearing. The values for spherical roller-bearings are provided in the table of chapter 8.

Oil is pumped into the hydraulic nut using a hand pump. The ring piston moves the roller bearing onto the sleeve or the cone-shaped bearing seat.
The pumping process is to be continued until the prescribed displacement has been reached. It is recommended to make a final inspection of the clearance in the final position after the pressure has been released (feeler gauge).

⚠ ***Caution:*** *A circumferential, yellow marking on the ring piston shows that the maximum permitted stroke has been reached. As soon as this marker is aligned with the edge of the ring body, the ring piston may not be pumped out of the ring body any further (risk of injury / damage to the hydraulic nut)*

Open the reflux valve to de-install the nut. The ring piston automatically moves back to the initial position and presses the oil out of the hydraulic nut into the pump. The nut can now be de-installed. The press-fitted assembly must thereafter be fastened with a shaft and a safety washer.

6. SERVICING AND MAINTENANCE

Dirt and oil residues must be removed from the surfaces after every use to ensure flawless and safe functioning of the hydraulic nut and the hydraulic components.
Hydraulic connections and threads must be checked for possible damage.
The hydraulic connections must be safely closed with covers after use and protected against the penetration of dirt.

Care must be taken to ensure that only clean hydraulic oil that complies with the specifications prescribed is used. The pump tank must always be filled with sufficient oil.

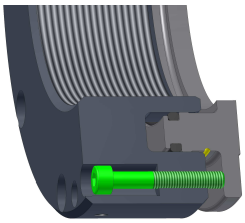
The O-rings rings are usually defective when oil leaks from the hydraulic nut during use. They must be exchanged in sets (1 set with two O-ring cords is part of the delivery).

<u>The exchange of the O-rings must be performed as follows:</u>

⚠ ***Caution:*** *Install in a pressure-free state!*

Safely fasten the hydraulic nuts and remove the bolts, washers and pressure springs (*Item 10*).
The de-installing thread at the end face (*see figure below*) can be used to press the ring piston evenly out of the ring body with the aid of pan screws. Moisten the new O-rings (*Item 9*) slightly with some oil and place them into the groves of the ring piston. Thereafter, carefully reinsert the ring piston into the ring body. Install the pressure springs, washers and bolts. Apply thread locker (e.g. Loctite) to the bolts, position and fasten them with the max. permitted fastening torque (see technical data), working crosswise.

Dismounting the ring piston



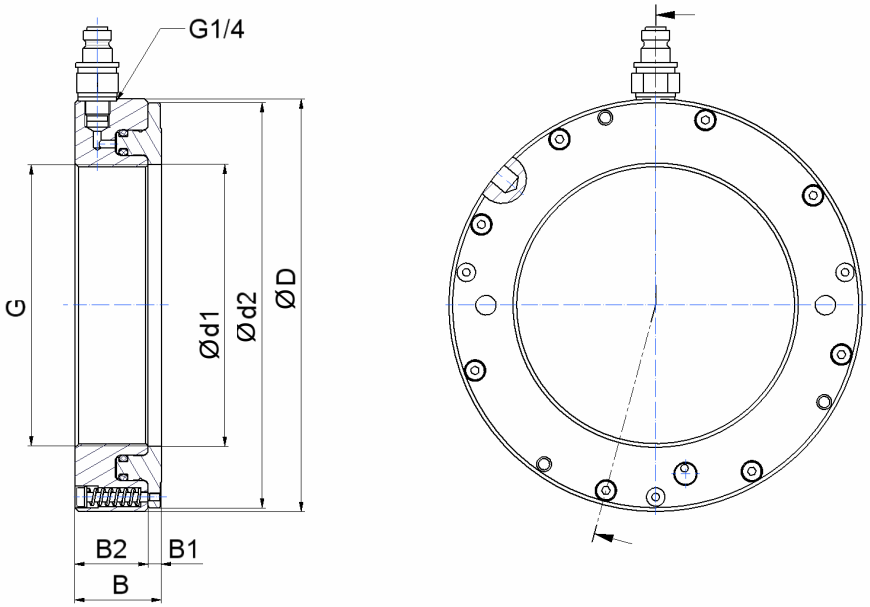
Required Screws (DIN 4762):

HMV10EBF – HMV47EBF	*3 x M5x40*
HMV48EBF – HMV90EBF	*4 x M6x50*
HMV92EBF – HMV108EBF	*4 x M8x60*
HMV110EBF – HMV138EBF	*6 x M8x60*
HMV142EBF – HMV200EBF	*8 x M8x60*

(Screws are not included in the scope of the delivery)

Threaded hole for de-installing the ring piston.
(Example: HMV30EBF)

7. MEASUREMENT TABLE



HMV..EBF	Measurements									
	G	D	B	max. Ød2	h	B1	B2	Ød1	A	m
	mm	mm	mm	mm	mm	mm	mm	mm	mm²	kg
10	M50x1.5	114	43	110	5	5	38	50.5	2850	2.9
11	M55x2	120	43	116	5	5	38	55.5	3050	3
12	M60x2	125	43	121	5	5	38	60.5	3250	3
13	M65x2	130	43	126	5	5	38	65.5	3500	3.2
14	M70x2	135	43	131	5	5	38	70.5	3650	3.4
15	M75x2	140	43	136	5	5	38	75.5	3850	3.6
16	M80x2	146	43	142	5	5	38	80.5	4150	3.9
17	M85x2	150	43	146	5	5	38	85.5	4300	4
18	M90x2	156	43	152	5	5	38	90.5	4850	4.2
19	M95x2	162	43	158	5	5	38	95.5	5050	4.5
20	M100x2	166	44	162	5	6	38	100.5	5100	4.6
21	M105x2	172	44	168	5	6	38	105.5	5200	4.9
22	M110x2	178	44	174	5	6	38	110.5	5400	5.2
23	M115x2	182	44	178	5	6	38	115.5	5800	5.2
24	M120x2	188	44	184	5	6	38	120.5	5950	5.5
25	M125x2	192	44	188	5	6	38	125.5	6350	5.6
26	M130x2	198	44	194	5	6	38	130.5	6450	5.9
27	M135x2	204	44	200	5	6	38	135.5	6900	6.1
28	M140x2	208	45	204	5	7	38	140.5	7250	6.2
29	M145x2	214	46	210	5	7	39	145.5	7400	6.7
30	M150x2	220	46	216	5	7	39	150.5	7600	6.8
31	M155x3	226	46	222	5	7	39	155.5	8450	7.2
32	M160x3	232	47	228	6	7	40	160.5	8650	7.8
33	M165x3	238	47	234	6	7	40	165.5	8750	8.1
34	M170x3	244	48	240	6	7	41	170.5	9800	8.6
36	M180x3	256	48	252	6	7	41	180.5	11250	9.4
38	M190x3	270	50	266	7	8	42	191	11800	10.7
40	M200x3	282	51	278	8	8	43	201	12100	11.7
41	Tr205x4	288	51	284	8	8	43	207	13050	12.2
42	Tr210x4	294	52	290	9	8	44	212	13400	12.7
43	Tr215x4	300	52	296	9	8	44	217	14050	13.2

HMV..EBF	Measurements									
	G	D	B	max. Ød2	h	B1	B2	Ød1	A	m
	mm	mm	mm	mm	mm	mm	mm	mm	mm²	kg
44	Tr220x4	306	52	302	9	8	44	222	14800	13.7
45	Tr225x4	312	53	308	9	8	45	227	15150	14.7
46	Tr230x4	318	53	314	9	8	45	232	15450	14.7
47	Tr235x4	326	54	322	10	8	46	237	16600	16.2
48	Tr240x4	330	55	326	10	9	46	242	17250	16.2
50	Tr250x4	342	55	338	10	9	46	252	17550	17.7
52	Tr260x4	356	56	352	11	9	47	262	19150	19.2
54	Tr270x4	368	57	364	12	9	48	272	20350	20.7
56	Tr280x4	380	58	376	12	9	49	282	21050	22.2
58	Tr290x4	390	58	386	13	9	49	292	22350	22.7
60	Tr300x4	404	61	400	14	10	51	302	23600	25.7
62	Tr310x5	416	62	412	14	10	52	312	24850	27.2
64	Tr320x5	428	63	424	14	10	53	322	26250	29.7
66	Tr330x5	438	63	434	14	10	53	332	27500	30.2
68	Tr340x5	450	64	446	14	10	54	342	27750	31.7
69	Tr345x5	456	64	452	14	10	54	347	29350	32.7
70	Tr350x5	464	66	460	14	10	56	352	29800	35.2
72	Tr360x5	472	66	468	15	10	56	362	31250	35.7
73	Tr365x5	482	68	478	15	11	57	367	31600	38.7
74	Tr370x5	486	68	482	16	11	57	372	33300	39.2
76	Tr380x5	498	69	494	16	11	58	382	33500	40.7
77	Tr385x5	504	69	500	16	11	58	387	34050	41.2
80	Tr400x5	522	71	518	17	11	60	402	36600	45.7
82	Tr410x5	534	72	530	17	11	61	412	38200	48.2
84	Tr420x5	546	72	542	17	11	61	422	39900	50.2
86	Tr430x5	556	73	552	17	11	62	432	40750	52.7
88	Tr440x5	566	74	562	17	12	62	442	42400	54.2
90	Tr450x5	580	76	576	17	12	64	452	44100	57.7
92	Tr460x5	590	76	586	17	12	64	462	45100	60.2
94	Tr470x5	602	77	598	18	12	65	472	46800	62.2
96	Tr480x5	612	77	608	19	12	65	482	48600	63.2
98	Tr490x5	624	78	620	19	12	66	492	49500	66.2
100	Tr500x5	636	79	630	19	12	67	502	49950	70.2
102	Tr510x6	648	80	642	20	12	68	512	53300	74.2
104	Tr520x6	658	81	652	20	13	68	522	54250	75.2
106	Tr530x6	670	82	664	21	13	69	532	56150	79.2
108	Tr540x6	682	82	676	21	13	69	542	58200	81.2
110	Tr550x6	693	83	687	21	13	70	552	59150	84.2
112	Tr560x6	704	84	698	22	13	71	562	61150	88.2
114	Tr570x6	716	85	710	23	13	72	572	63200	91.2
116	Tr580x6	726	85	720	23	13	72	582	64200	94.2
120	Tr600x6	748	86	742	23	13	73	602	67400	100.2
126	Tr630x6	782	88	776	23	14	74	632	72850	110.2
130	Tr650x6	804	89	798	23	14	75	652	76100	115.2
134	Tr670x6	826	90	820	24	14	76	672	79450	120.2
138	Tr690x6	848	91	842	25	14	77	692	84200	127.2
142	Tr710x7	870	93	864	25	15	78	712	87700	135.2
150	Tr750x7	912	94	906	25	15	79	752	95050	146.2
160	Tr800x7	965	96	959	25	16	80	802	103800	161.2
170	Tr850x7	1020	99	1014	26	16	83	852	114450	181.2
180	Tr900x7	1075	103	1069	30	17	86	902	123950	205.2
190	Tr950x8	1126	103	1120	30	17	86	952	135450	218.2
200	Tr1000x8	1180	105	1174	34	17	88	1002	145700	239.2

8. TABLE FOR RADIAL CLEARANCE REDUCTION / AXIAL DISPLACEMENT

Bore [mm]		Before mounting						After mounting			Axial Displacement mm			
		C0		C3		C4		C0	C3	C4	Taper 1:12		Taper 1:30	
		According to ISO 5753 [mm]		According to ISO 5753 [mm]		According to ISO 5753 [mm]		According to ISO 5753 [mm]	According to ISO 5753 [mm]	According to ISO 5753 [mm]				
over	up to	min.	max.	min.	max.	min.	max.				min.	max.	min.	max.
30	40	0,035	0,050	0,050	0,065	0,065	0,085	0,015	0,025	0,040	0,350	0,400	–	–
40	50	0,045	0,060	0,060	0,080	0,080	0,100	0,020	0,030	0,050	0,400	0,450	–	–
50	65	0,055	0,075	0,075	0,095	0,095	0,120	0,025	0,035	0,055	0,450	0,600	–	–
65	80	0,070	0,095	0,095	0,120	0,120	0,150	0,025	0,040	0,070	0,600	0,750	–	–
80	100	0,080	0,110	0,110	0,140	0,140	0,180	0,035	0,050	0,080	0,700	0,900	1,700	2,200
100	120	0,100	0,135	0,135	0,170	0,170	0,220	0,050	0,065	0,100	0,750	1,100	1,900	2,700
120	140	0,120	0,160	0,160	0,200	0,200	0,260	0,055	0,080	0,110	1,100	1,400	2,700	3,500
140	160	0,130	0,180	0,180	0,230	0,230	0,300	0,055	0,090	0,130	1,200	1,600	3,000	4,000
160	180	0,140	0,200	0,200	0,260	0,260	0,340	0,060	0,100	0,150	1,300	1,700	3,200	4,200
180	200	0,160	0,220	0,220	0,290	0,290	0,370	0,070	0,100	0,160	1,400	2,000	3,500	5,000
200	225	0,180	0,250	0,250	0,320	0,320	0,410	0,080	0,120	0,180	1,600	2,200	4,000	5,500
225	250	0,200	0,270	0,270	0,350	0,350	0,450	0,090	0,130	0,200	1,700	2,400	4,200	6,700
250	280	0,220	0,300	0,300	0,390	0,390	0,490	0,100	0,140	0,220	1,900	2,700	4,700	6,700
280	315	0,240	0,330	0,330	0,430	0,430	0,540	0,110	0,150	0,240	2,000	3,000	5,000	7,500
315	355	0,270	0,360	0,360	0,470	0,470	0,590	0,120	0,170	0,260	2,400	3,300	6,000	8,200
355	400	0,300	0,400	0,400	0,520	0,520	0,650	0,130	0,190	0,290	2,600	3,600	6,500	9,000
400	450	0,330	0,440	0,440	0,570	0,570	0,720	0,130	0,200	0,310	3,100	4,000	7,700	10,000
450	500	0,370	0,490	0,490	0,630	0,630	0,790	0,160	0,230	0,350	3,300	4,400	8,200	11,000
500	600	0,410	0,540	0,540	0,680	0,680	0,870	0,170	0,250	0,360	3,700	5,000	9,200	12,500

Push the bearing on the taper and screw the hydraulic nut on the thread of the shaft or the adapter sleeve by hand until a positive connection is formed between the parts. The hydraulic nut is in the starting position.
Connect the hydraulic unit with the hydraulic nut and move the bearing by means of oil pressure in the corresponding end position.
After reaching the end point the radial clearance of the bearing should be checked with a feeler gauge in any case.
Therefore release the oil pressure at the pump until the ring piston is back in its starting position.

9. SELECTION TABLE FOR HYDRAULIC NUT

9.1. For Dismounting / Mounting with Withdrawal Sleeve

HMV.. EBF Size	Thread Hydraulic Nut	Shaft-Ø mm	Bore mm	WITHDRAWAL SLEEVE				
10	M50x1.5	40	45	AH2309	AH309			
11	M55x2	45	50	AHX2310	AHX310			
12	M60x2	45	50	AH2310	AH310			
12	M60x2	50	55	AHX2311	AHX311			
13	M65x2	50	55	AH2311	AH311			
13	M65x2	55	60	AHX2312	AHX312			
14	M70x2	55	60	AH2312	AH312			
14	M70x2	60	65	AH2313G	AH313G			
15	M75x2	60	65	AH2313	AH313			
15	M75x2	65	70	AHX2314G	AH314G			
16	M80x2	65	70	AHX2314	AH314			
16	M80x2	70	75	AHX2315G	AH315G			
17	M85x2	65	70	AH2314				
17	M85x2	70	75	AHX2315	AH315			
18	M90x2	70	75	AH2315				
18	M90x2	75	80	AHX2316	AH316			
19	M95x2	75	80	AH2316				
19	M95x2	80	85	AHX2317	AHX317			
20	M100x2	80	85	AH2317	AH317			
20	M100x2	85	90	AHX2318	AHX318	AHX3218		
21	M105x2	85	90	AH2318	AH318			
21	M105x2	90	95	AHX2319	AHX319			
22	M110x2	90	95	AH2319	AH319			
22	M110x2	95	100	AHX2320	AHX320	AHX3120	AHX3220	
23	M115x2	95	100	AH320				
23	M115x2	105	110	AH24122				
24	M120x2	95	100	AH2320				
24	M120x2	105	110	AHX2322G	AHX3122	AHX3222G		
25	M125x2	100	110	AH3122				
25	M125x2	105	110	AHX2322	AHX3222			
25	M125x2	115	120	AH24024				
26	M130x2	100	110	AH2322	AH322			
26	M130x2	110	120	AH3024				
26	M130x2	115	120	AHX2324G	AH24124	AHX3024	AHX3124	AHX3224G
27	M135x2	115	120	AHX2324	AHX3224			
27	M135x2	125	130	AH24026				
28	M140x2	110	120	AH2324	AH3124			
28	M140x2	120	130	AH3026				
28	M140x2	125	130	AHX2326G	AH24126	AHX3026	AHX3126	AHX3226G
29	M145x2	125	130	AHX2326	AHX3226			
29	M145x2	135	140	AH24028				

HMV.. EBF Size	Thread Hydraulic Nut	Shaft-Ø mm	Bore mm	WITHDRAWAL SLEEVE									
30	M150x2	120	130	AH2326	AH3126								
30	M150x2	130	140	AH3028									
30	M150x2	135	140	AHX2328G	AH24128	AHX3028	AHX3128	AHX3228G					
31	M155x3	135	140	AHX2328	AHX3228								
31	M155x3	145	150	AH24030									
32	M160x3	130	140	AH2328	AH3128								
32	M160x3	140	150	AH3030									
32	M160x3	145	150	AHX2330G	AH24130	AHX3030	AHX3130G	AHX3230G					
33	M165x3	145	150	AHX2330	AHX3130	AHX3230							
34	M170x3	140	150	AH2330	AH3130								
34	M170x3	150	160	AH2332G	AH24032	AH24132	AH3032	AH3132G	AH3232G				
36	M180x3	150	160	AH2332	AH3132	AH3232							
36	M180x3	160	170	AH2334G	AH24034	AH24134	AH3034	AH3134G	AH3234G				
38	M190x3	160	170	AH2334	AH3134	AH3234							
38	M190x3	170	180	AH2236G	AH2336G	AHX2336G	AH24036	AH24136	AH3036	AH3136G	AH3236G		
40	M200x3	170	180	AH2236	AH2336	AH3136	AH3236						
40	M200x3	180	190	AH2238G	AH2338G	AH24038	AH24138	AH3038G	AH3138G	AH3238G			
41	Tr205x4	180	190	AH3038									
42	Tr210x4	180	190	AH2238	AH2338	AH3138	AH3238						
42	Tr210x4	190	200	AH24040	AH24140	AH3040G							
43	Tr215x4	190	200	AH3040									
44	Tr220x4	190	200	AH2240	AH2340	AH3140	AH3240						
46	Tr230x4	200	220	AOH24044	AOH24144	AH3044G	AOH3044G						
47	Tr235x4	200	220	AH3044	AOH3044								
48	Tr240x4	200	220	AH2244	AOH2244	AH2344	AOH2344	AH3144	AOH3144				
50	Tr250x4	220	240	AOH24048									
52	Tr260x4	220	240	AH2248	AOH2248	AH2348	AOH2348	AOH24148	AH3048	AOH3048	AH3148	AOH3148	
54	Tr270x4	240	260	AOH24052									
56	Tr280x4	240	260	AH2252G	AOH2252G	AH2352G	AOH2352G	AOH24052G	AOH24152	AH3052	AOH3052	AH3152G	AOH3152G
58	Tr290x4	240	260	AH2252	AOH2252	AH2352	AOH2352	AH3152	AOH3152				
58	Tr290x4	260	280	AOH24056									
60	Tr300x4	260	280	AH2256G	AOH2256G	AH2356G	AOH2356G	AOH24056G	AOH24156	AH3056	AOH3056	AH3156G	AOH3156G
62	Tr310x5	260	280	AH2256	AOH2256	AH2356	AOH2356	AH3156	AOH3156				
62	Tr310x5	280	300	AOH24060									
64	Tr320x5	280	300	AH2260G	AOH2260G	AOH24060G	AOH24160	AH3060	AOH3060	AH3160G	AOH3160G	AH3260G	AOH3260G
66	Tr330x5	280	300	AH2260	AOH2260	AH3160	AOH3160	AH3260	AOH3260				
66	Tr330x5	300	320	AOH24064									
68	Tr340x5	300	320	AH2264G	AOH2264G	AOH24064G	AOH24164	AH3064G	AOH3064G	AH3164G	AOH3164G	AH3264G	AOH3264G
69	Tr345x5	300	320	AH3064	AOH3064								
70	Tr350x5	300	320	AH2264	AOH2264	AH3164	AOH3164	AH3264	AOH3264				
72	Tr360x5	320	340	AOH24068	AOH24168	AH3068G	AOH3068G	AH3168G	AOH3168G	AH3268G	AOH3268G		
73	Tr365x5	320	340	AH3068	AOH3068								
74	Tr370x5	320	340	AH3168	AOH3168	AH3268	AOH3268						
76	Tr380x5	340	360	AOH24072	AOH24172	AH3072G	AOH3072G	AH3172G	AOH3172G	AH3272G	AOH3272G		
77	Tr385x5	340	360	AH3072	AOH3072								

HMV.. EBF Size	Thread Hydraulic Nut	Shaft-Ø mm	Bore mm	WITHDRAWAL SLEEVE							
80	Tr400x5	340	360	AH3172	AOH3172	AH3272	AOH3272				
80	Tr400x5	360	380	AOH24076	AOH24176	AH3076G	AOH3076G	AH3176G	AOH3176G	AH3276G	AOH3276G
82	Tr410x5	360	380	AH3076	AOH3076						
84	Tr420x5	360	380	AH3176	AOH3176	AH3276	AOH3276				
84	Tr420x5	380	400	AOH24080	AOH24180	AH3080G	AOH3080G	AH3180G	AOH3180G	AH3280G	AOH3280G
86	Tr430x5	380	400	AH3080	AOH3080						
88	Tr440x5	380	400	AH3180	AOH3180	AH3280	AOH3280				
88	Tr440x5	400	420	AOH24084	AOH24184	AH3084G	AOH3084G	AH3184G	AOH3184G	AH3284G	AOH3284G
90	Tr450x5	400	420	AH3084	AOH3084						
92	Tr460x5	400	420	AH3184	AOH3184	AH3284	AOH3284				
92	Tr460x5	420	440	AOH24088	AOH24188	AHX3088G	AOHX3088G	AHX3188G	AOHX3188G	AHX3288G	AOHX3288G
94	Tr470x5	420	440	AHX3088	AOHX3088						
96	Tr480x5	420	440	AHX3188	AOHX3188	AHX3288	AOHX3288				
96	Tr480x5	440	460	AOH24092	AOH24192	AHX3092G	AOHX3092G	AHX3192G	AOHX3192G	AHX3292G	AOHX3292G
98	Tr490x5	440	460	AHX3092	AOHX3092						
100	Tr500x5	460	480	AOH24096	AOH24196	AHX3096G	AOHX3096G	AHX3196G	AOHX3196G	AHX3296G	AOHX3296G
102	Tr510x6	440	460	AHX3192	AOHX3192	AHX3292	AOHX3292				
104	Tr520x6	460	480	AHX3096	AOHX3096						
106	Tr530x6	460	480	AHX3196	AOHX3196	AHX3296	AOHX3296				
106	Tr530x6	480	500	AOH240/500	AOH241/500	AHX30/500G	AOHX30/500	AHX31/500G	AOHX31/500G	AHX32/500G	AOHX32/500G
108	Tr540x6	480	500	AHX30/500	AOHX30/500						
110	Tr550x6	480	500	AHX31/500	AOHX31/500	AHX32/500	AOHX32/500				
110	Tr550x6	500	530	AOH240/530	AOHX241/530						
112	Tr560x6	500	530	AOH240/530G	AOH241/530G	AH30/530	AOH30/530	AH31/530	AOH31/530	AH32/530G	AOH32/530G
116	Tr580x6	500	530	AH32/530	AOH32/530						
116	Tr580x6	530	560	AOH240/560	AOHX241/560						
120	Tr600x6	530	560	AOH240/560G	AOH241/560G	AHX30/560	AOHX30/560	AH31/560	AOH31/560	AHX32/560	AOHX32/560
126	Tr630x6	570	600	AOHX240/600	AOHX241/600	AHX30/600	AOHX30/600	AHX31/600	AOHX31/600	AHX32/600G	AOHX32/600G
130	Tr650x6	570	600	AHX32/600	AOHX32/600						
130	Tr650x6	600	630	AOH240/630	AOHX241/630						
134	Tr670x6	600	630	AOH240/630G	AOH241/630G	AH30/630	AOH30/630	AH31/630	AOH31/630	AH32/630G	AOH32/630G
138	Tr690x6	630	670	AOH240/670							
142	Tr710x7	630	670	AOH240/670G	AOHX241/670	AH30/670	AOH30/670	AHX31/670	AOHX31/670	AH32/670G	AOH32/670G
150	Tr750x7	670	710	AOH240/710G	AOHX241/710	AHX30/710	AOHX30/710	AHX31/710	AOHX31/710	AH32/710G	AOH32/710G
160	Tr800x7	710	750	AOH240/750G	AOH241/750G	AH30/750	AOH30/750	AH31/750	AOH31/750	AH32/750	AOH32/750
170	Tr850x7	750	800	AOH240/800G	AOH241/800G	AH30/800	AOH30/800	AH31/800	AOH31/800	AH32/800	AOH32/800
180	Tr900x7	800	850	AOH240/850G	AOHX241/850	AH30/850	AOH30/850	AH31/850	AOH31/850	AH32/850	AOH32/850
190	Tr950x8	850	900	AOH240/900	AOHX241/900	AH30/900	AOH30/900	AH31/900	AOH31/900	AH32/900	AOH32/900
200	Tr1000x8	900	950	AOH240/950	AOHX241/950	AH30/950	AOH30/950	AH31/950	AOH31/950	AH32/950	AOH32/950

9.2. For Dismounting / Mounting with Adapter Sleeve

HMV.. EBF Size	Thread Hydraulic Nut	Saft-Ø mm	Bore mm	ADAPTER SLEEVE [H200]	[H300]	[H2300]	[H3900]	[H3000]	[H3100]	[H3200]	[H39]	[H30]	[H31]	[H32]
10	M50x1.5	45	50	H210	H310	H2310								
11	M55x2	50	55	H211	H311	H2311								
12	M60x2	55	60	H212	H312	H2312								
13	M65x2	60	65	H213	H313	H2313								
14	M70x2	60	70	H214	H314	H2314								
15	M75x2	65	75	H215	H315	H2315								
16	M80x2	70	80	H216	H316	H2316								
18	M90x2	80	90	H218	H318	H2318								
19	M95x2	85	95	H219	H319	H2319								
20	M100x2	90	100	H220	H320	H2320			H3120					
21	M105x2	95	105	H221	H321	H2321								
22	M110x2	100	110	H222	H322	H2322			H3122					
24	M120x2	110	120			H2324		H3024	H3124					
26	M130x2	115	130			H2326		H3026	H3126					
28	M140x2	125	140			H2328		H3028	H3128					
30	M150x2	135	150			H2330		H3030	H3130					
32	M160x3	140	160			H2332		H3032	H3132					
36	M180x3	150	170			H2334		H3034	H3134					
36	M180x3	160	180			H2336	H3936	H3036	H3136					
38	M190x3	170	190			H2338	H3938	H3038	H3138					
48	Tr240x4	220	240			H2348	H3948	H3048	H3148					
56	Tr280x4	260	280			H2356	H3956	H3056	H3156					
60	Tr300x4	280	300				H3960	H3060	H3160	H3260				
64	Tr320x5	300	320				H3964	H3064	H3164	H3264				
72	Tr360x5	340	360				H3972	H3072	H3172	H3272				
76	Tr380x5	360	380				H3976	H3076	H3176	H3276				
80	Tr400x5	380	400				H3980	H3080	H3180	H3280				
84	Tr420x5	400	420				H3984	H3084	H3184	H3284				
88	Tr440x5	410	440				H3988	H3088	H3188	H3288				
92	Tr460x5	430	460				H3992	H3092	H3192	H3292				
96	Tr480x5	450	480				H3996	H3096	H3196	H3296				
100	Tr500x5	470	500								H39/500	H30/500	H31/500	H32/500
106	Tr530x6	500	530								H39/530	H30/530	H31/530	H32/530
112	Tr560x6	530	560								H39/560	H30/560	H31/560	H32/560
120	Tr600x6	560	600								H39/600	H30/600	H31/600	H32/600
126	Tr630x6	600	630								H39/630	H30/630	H31/630	H32/630
134	Tr670x6	630	670								H39/670	H30/670	H31/670	H32/670
150	Tr750x7	710	750								H39/750	H30/750	H31/750	H32/750
160	Tr800x7	750	800								H39/800	H30/800	H31/800	H32/800
170	Tr850x7	800	850									H30/850	H31/850	
180	Tr900x7	850	900									H30/900	H31/900	
190	Tr950x8	900	950									H30/950	H31/950	
200	Tr1000x8	950	1000									H30/1000	H31/1000	